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U.S. DEPARTMENT OF COMMERCE
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FIPS PUB 155

FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATION
(Former Federal Standard 1043)

DATA COMMUNICATION SYSTEMS AND SERVICES USER-ORIENTED PERFORMANCE MEASUREMENT METHODS

CATEGORY: TELECOMMUNICATIONS STANDARD

1988 NOVEMBER 4

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CATEGORY: TELECOMMUNICATIONS STANDARD

National Computer Systems Laboratory
National Institute of Standards and Technology
(formerly National Bureau of Standards)
Gaithersburg, MD 20899

NOTE: As of 23 August 1988, the National Bureau of Standards (NBS) became the National Institute of Standards and Technology (NIST) when President Reagan signed into law the Omnibus Trade and Competitiveness Act.

Issued November 4, 1988

U.S. Department of Commerce
Robert A. Mosbacher, Secretary

Ernest Ambler, Acting Under Secretary
for Technology

National Institute of Standards
and Technology
Raymond G. Kammer, Acting Director

This Standard was developed under a Memorandum of Understanding between NIST and NCS.

Foreword

The Federal Information Processing Standards Publication Series of the National Institute of Standards and Technology (NIST) is the official publication relating to standards and guidelines adopted and promulgated under the provisions of Section 111(d) of the Federal Property and Administrative Services Act of 1949 as amended by the Computer Security Act of 1987, Public Law 100-235. These mandates have given the Secretary of Commerce and NIST important responsibilities for improving the utilization and management of computer and related telecommunications systems in the Federal Government. The NIST through its National Computer Systems Laboratory provides leadership, technical guidance, and coordination of Government efforts in the development of standards and guidelines in these areas.

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James H. Burrows, Director
National Computer Systems
Laboratory

Abstract

This standard adopts American National Standard X3.141-1987, which specifies uniform methods of measuring the performance of data communication services at digital interfaces between data communication systems and their users. These methods may be used to characterize the performance of any data communication service in accordance with the user-oriented performance parameters defined in a companion standard, American National Standard X3.102-1983, which has been adopted as FIPS 144 (former Federal Standard 1033).

Key words: data communications systems and services; Federal Information Processing Standard; telecommunications; user-oriented performance measurement methods.

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Announcing the Standard for

DATA COMMUNICATION SYSTEMS AND SERVICES USER-ORIENTED PERFORMANCE MEASUREMENT METHODS

Federal Information Processing Standards Publications (FIPS PUBS) are issued by the National Institute of Standards and Technology after approval by the Secretary of Commerce pursuant to Section 111(d) of the Federal Property and Administrative Services Act of 1949 as amended by the Computer Security Act of 1987, Public Law 100-235.

1. Name of Standard. Data Communication Systems and Services User-Oriented Performance Measurement Methods (FIPS PUB 155).

2. Category of Standard. Telecommunications Standard.

3. Explanation. This standard adopts American National Standard X3.141-1987, which specifies uniform methods of measuring the performance of data communication services at digital interfaces between data communication systems and their users. These methods may be used to characterize the performance of any data communication service in accordance with the user-oriented performance parameters defined in a companion standard, American National Standard X3.102-1983, which has been adopted as FIPS 144 (former Federal Standard 1033).

4. Approving Authority. Secretary of Commerce.

5. Maintenance Agency. National Communications System, Office of Technology and Standards.

6. Cross Index.

a. Former Federal Standard (FED-STD) 1043, Data Communication Systems and Services User-Oriented Performance Measurement Methods.

b. ANSI X3.141-1987, Data Communication Systems and Services—Measurement Methods for User-Oriented Performance Evaluation.

7. Related Documents.

a. Federal Information Resources Management Regulation 201-8.1, Federal ADP and Telecommunications Standards.

b. ANSI X3.102-1983, Data Communication Systems and Services User-Oriented Performance Parameters.

8. Objectives. This standard is to provide Federal departments and agencies with uniform means of measuring the performance of data communication systems and services as perceived by end users. Performance measurements conducted in accordance with this standard are intended to be used in making communication management decisions concerning Federal acquisition and use of data communication systems and services.

9. Applicability. The measurement methods specified in American National Standard X3.141-1987 may be used in achieving a wide variety of measurement objectives, including service of network performance characterization, comparison of observed performance values with specifications, and the determination of system design, operation, or usage effects. They may be used in comprehensive experiments in which values for all standard parameters are determined or, with appropriate simplification, in very selective experiments—for example, the measurement of a single parameter such as Bit Error Probability. They may be applied at any pair of digital interfaces.

10. Specifications. This standard adopts in whole the American National Standard X3.141-1987, Data Communication Systems and Services—Measurement Methods for User-Oriented Performance Evaluation.

11. Implementation. The use of this standard by Federal departments and agencies is compulsory and binding, effective April 21, 1989.

American National Standard X3.141-1987 shall be used by all Federal departments and agencies in conducting data communication performance measurements intended to determine values for the user-oriented performance parameters defined in American National Standard X3.102-1983.

12. Waivers. Under certain exceptional circumstances, the heads of Federal departments and agencies may approve waivers to Federal Information Processing Standards (FIPS). The head of such agency may redelegate such authority only to a senior official designated pursuant to section 3506(b) of Title 44, United States Code. Waivers shall be granted only when:

a. Compliance with a standard would adversely affect the accomplishment of the mission of an operator of a Federal computer system, or

b. Cause a major adverse financial impact on the operator which is not offset by Government-wide savings.

Agency heads may act upon a written waiver request containing the information detailed above. Agency heads may also act without a written waiver request when they determine that conditions for meeting the standard cannot be met. Agency heads may approve waivers only by a written decision which explains the basis on which the agency head made the required finding(s). A copy of each such decision, with procurement sensitive or classified portions clearly identified, shall be sent to: National Institute of Standards and Technology, ATTN: FIPS Waiver Decisions, Technology Building, Room B-154, Gaithersburg, MD 20899.

In addition notice of each waiver granted and each delegation of authority to approve waivers shall be sent promptly to the Committee on Government Operations of the House of Representatives and the Committee on Governmental Affairs of the Senate and shall be published promptly in the *Federal Register.*

When the determination on a waiver applies to the procurement of equipment and/or services, a notice of the waiver determination must be published in the *Commerce Business Daily* as a part of the notice of solicitation for offers of an acquisition or, if the waiver determination is made after that notice is published, by amendment to such notice.

A copy of the waiver, any supporting documents, the document approving the waiver and any supporting and accompanying documents, with such deletions as the agency is authorized and decides to make under 5 U.S.C. Sec. 552(b), shall be part of the procurement documentation and retained by the agency.

13. Conflict with Referenced Documents. Where the requirements stated in this standard conflict with any requirements in a referenced document, the requirements of this standard shall apply. The nature of the conflict between this standard and a reference document shall be submitted in duplicate to the Director, National Computer and Telecommunications Laboratory, Technology Building, Room B-154, National Institute of Standards and Technology, Gaithersburg, MD 20899.

14. Where to Obtain Copies. Copies of this publication are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. (Sale of the included specifications document is by arrangement with the American National Standards Institute.) When ordering, refer to Federal Information Processing Standards Publication 155 (FIPSPUB155), and title. Payment may be made by check, money order, purchase order, credit card, or deposit account.

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